

Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

5 Listing of Claims:

Claims 1-23 (Cancelled)

Claim 24 (New): An apparatus for automatically determining a type of an external device, comprising:

- 10 a jack for coupling the external device;
 an impedance detecting circuit, coupled to the external device through the jack, for
 generating three or more analog signals according to an impedance of the external
 device;
 an analog-to-digital converter, coupled to the impedance detecting circuit, for
15 converting the analog signals to a plurality of digital values which includes first,
 second and third digital values; and
 a control circuit, coupled to the analog-to-digital converter, for determining the type
 of the external device when the first, second and third digital values together
 indicate a recognized condition.

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Claim 25 (New): The apparatus of claim 24, wherein the impedance detecting circuit comprises:

- a plurality of impedance elements; and
 a switching circuit for selectively coupling at least one of the impedance elements to
25 the external device and thereby sequentially generating a first, second and third
 analog signals which are respectively converted into the first, second and third
 values by the analog-to-digital converter.

Claim 26 (New): The apparatus of claim 24, wherein the recognized condition represents that each of the first, second and third values falls within a predetermined range; wherein at least two of the first, second and third values correspond to different predetermined ranges.

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Claim 27 (New): The apparatus of claim 26, wherein the predetermined ranges comprise a first range, a second range and a third range such that the control circuit determines the type of the external device when the first value falls within the first range, the second value falls within the second range and the third value falls within the third range.

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Claim 28 (New): the apparatus of claim 27, wherein at least two of the first, second and third ranges are different.

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Claim 29 (New): The apparatus of claim 24 further comprising:
a connection detecting circuit, coupled between the jack and the impedance detecting circuit, for determining whether the external device couples to the jack such that the impedance detecting circuit generates the plurality of analog signals when the connection detecting circuit determines the external device being coupled to the jack.

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Claim 30 (New): The apparatus of claim 24, wherein the control circuit disconnects the coupling relation between the impedance detecting circuit and the jack after determining the type of the external device.

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Claim 31 (New): The apparatus of claim 30 further comprising:
a multiplexing circuit for coupling the external device to an internal circuit according to the type of the external device determined by the control circuit.

Claim 32 (New): The apparatus of claim 24 further comprising:

a decoder, coupled to the control circuit, for receiving a first number of outputs from the control circuit and thereby generating a second number of outputs;
wherein the second number is larger than the first number.

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Claim 33 (New): A method for automatically determining a type of an external device, comprising:

generating a first analog signal according to a first relation between a plurality of predetermined impedances and an impedance of the external device;

10 generating a second analog signal according to a second relation between the plurality of predetermined impedances and the impedance of the external device;
generating a third analog signal according to a third relation between the plurality of predetermined impedances and the impedance of the external device;

15 respectively converting the first, second and third analog signals to first, second and third digital values; and

determining the type of the external device when the first, second and third digital values together indicate a recognized condition.

Claim 34 (New): The method of claim 33 further comprising:

20 decoupling the first impedance element from the impedance of the external device before coupling the second impedance element to the impedance of the external device;

decoupling the second impedance element from the impedance of the external device before coupling the third impedance element to the impedance of the external
25 device; and

decoupling all of the first, second and third impedance elements from the impedance of the external device after constituting the recognized condition.

Claim 35 (New): The method of claim 33, wherein the recognized condition represents
that each of the first, second and third digital values falls within a predetermined
range;
wherein at least two of the first, second and third digital values correspond to
5 different predetermined ranges.

Claim 36 (New): The method of claim 35, wherein the predetermined ranges comprise a
first range, a second range and a third range such that the type of the external device
is determined when the first digital value falls within the first range, the second
10 digital value falls within the second range and the third digital value falls within the
third range.

Claim 37 (New): The method of claim 36, wherein at least two of the first, second and
third ranges are different.
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